

REMARKS

This amendment is in response to the Office Action of December 15, 2003 in which then pending claims 1-39 and 43 were rejected.

Regarding the applicant's claim for foreign priority, we enclose a copy of form PCT/IB/304 indicating that the priority document GB 9904181.6 was received by the International Bureau on May 3, 2000, i.e., within 16 months of the priority date and thereby fulfilling the requirements of Rule 17.1(a).

Regarding the objection to claim 10 for improper multiple dependency form, claim 10 has been cancelled.

Regarding the 35 U.S.C. § 102(e) rejection of claims 1-39 and 43 as being anticipated by Waugh (U.S. 6,104,928), although the reference solves a problem that is not related to that addressed by the present invention, many of the claims seem to be very close to what is shown by the reference, as pointed out by the Examiner. Applicant has therefore amended the independent claims 1 and 21, to claim a switch and method wherein the call set-up message contains an empty bearer capability information element to inform the recipient terminal that the terminating network is not able to provide the recipient terminal with information from the originating network about the type of call to be set-up. None of these features are shown or even suggested by Waugh. Applicant has cancelled independent claims 37 and 39 as well as dependant claim 38 and added new independent claims 56 and 69 which all emphasize the inventive solution to one of the problems solved by the present invention. A brief description of the invention follows. After that, the applicant provides remarks concerning the amendment filed to overcome the rejection.

The invention disclosed in the present application relates to a method and apparatus for identifying the type of telecommunications service required during call establishment over two networks (page 1, lines 6 to 8). It also concerns the establishment of call control appropriate to the telecommunications service identified by the originating network (page 1, lines 1 to 10).

As explained in the background section of the application, different communications networks have different characteristics and operating principles. Some networks, such as parts of the Public Switched Telephone Network (PSTN) still employ analog data transmission, while others, for example the Integrated Services Digital Network (ISDN) and the Public Land Mobile Network (PLMN) employ digital communication technology (page 1, lines 22 to 31). Furthermore, some communications networks are designed primarily for telecommunications, while others, such as the Internet and local area networks are tailored more towards general-purpose data communications (page 2, lines 1 to 10). However, convergence is taking place between the traditional telecommunications and data communications sectors such that progressive overlap between the roles of telecommunications and data communications networks is occurring (page 2, lines 12 to 17). This has given rise to a greater need to transfer data between dissimilar communications networks and has led to a significant problem of inter-operability or interworking (page 2, lines 19 to 23).

The invention disclosed in the present application seeks to address this problem and, in particular, proposes solutions for providing circuit switched telecommunications services between a). the PSTN and the PLMN and b). the ISDN and the PLMN (page 2, lines 25 to 32 and page 3, lines 1 to 11).

When setting up a circuit switched connection for a telecommunications service, an appropriate bearer service must be selected (page 3, lines 13 to 22). The type of bearer service to be established depends on the type of telecommunications service required by the end-users and thus, when establishing communication between two dissimilar networks, end-to-end indication of the type of communication requested is desirable in order to enable selection of an appropriate bearer service in both networks (page 3, lines 24 to 31). However, since the signalling protocols in the two different networks are typically different, end-to-end signalling of the requested call-type information between the networks cannot be achieved in a straightforward manner (page 3, line 31 to page 4, line 2). This is particularly true in situations where end-to-end digital signalling cannot be effected, as is the case when interworking between the analog PSTN, where call type

information is signalled in-band and the PLMN, where call type information is indicated using digital out-band signalling (page 4, lines 2 to 7).

The prior art signalling of call type information in PLMN networks implemented according to GSM standards is described in GSM specification 09.07, as is the interworking between analog PSTN networks and GSM mobile communications networks. As discussed in connection with Figure 2 of the present application between page 5, line 31 and page 7, line 20, prior art signalling of call type information in the GSM system is based on a multiple numbering scheme in which each type of communication service supported by a GSM mobile station is associated with a separate user number (i.e. telephone number). More specifically, when a call originates from the PSTN, an initial SETUP message is sent to the GSM network. This includes a Called Line Identification (CLI) i.e. a telephone number. The Home Location Register (HLR) of the GSM network contains a database entry corresponding to the CLI which indicates the call type and bearer service associated with the CLI. The bearer service information associated with the CLI is retrieved from the database and sent in a SETUP message from the GSM network to the recipient mobile terminal. The terminal is thus notified about the incoming call and is further made aware of the required bearer service (page 5, line 31 to page 6, line 5). Using the arrangement just described, interworking between the PSTN and the GSM network can be effected in a relatively straightforward manner (page 6, lines 16 to 31). However, the multiple numbering scheme has a number of disadvantages. It increases the complexity of numbers to be dialled, increases the amount of subscriber numbers in use and places a burden on the user, who must remember which number corresponds to which telecommunications service. The storage of bearer service information relating to each CLI in the HLR also increases the storage requirements of the HLR, which is also undesirable.

In order to overcome the above-mentioned disadvantages, a particular aspect of the disclosed invention provides a new method of call type signalling that enables the use of a single numbering scheme. In particular, and as discussed between page 30, line 29 and page 32, line 15 of the present application, according to this aspect of the

invention, when the mobile communication network receives an incoming call it sends a SETUP message to the recipient mobile terminal, but does not indicate a call type in the SETUP message. Instead, the Bearer Capability Information Element (BC IE) of the SETUP message, which usually carries information about the required bearer service, is left empty (page 31, lines 3 to 9). At the mobile terminal receipt of a SETUP message containing no bearer capability information, informs the mobile terminal that the calling party resides outside the mobile communication network and is not able to provide direct out-band digital signalling of the call type and bearer service required (page 31, lines 9 to 13).

Next, the mobile terminal forms a Call Confirmation (CALL-CONF) message and transmits it to the mobile network. Preferably, both call type and bearer capability information is provided in the CALL-CONF message (page 31, lines 13 to 17). When the CALL-CONF message is received by the network, call establishment proceeds to the point at which the called subscriber answers the call (page 31, lines 22 to 31), at which point a signalling detector in an MSC through which the call is routed starts listening for in-band signalling that might indicate the call type and bearer service required by the calling terminal (page 32, lines 1 to 3). If the signalling detector receives a code with a recognized signature (for example a code indicative of a call from an H.324 standard compliant multimedia terminal), steps are taken to complete the call in a manner appropriate for end-to-end communication between the terminals (page 32, lines 3 to 15). Thus, this aspect of the invention disclosed in the present application removes the need for multiple user numbers to be associated with a mobile terminal. It does so by providing a new mechanism for signalling the arrival of a mobile terminated call, identifying call type and bearer service information in the mobile communication network and setting up the call according to the identified information.

Now, concerning the novelty rejection of claims 1-39 and 43, based on Waugh (U.S. 6,104,928), the Waugh reference provides an access base station (ABS) 40 (see Fig. 1) that makes it possible for wired devices 45, 46, 47 to appear to a wireless network 20 as if they were mobile phones. The device 40 emulates all of the functions

of a mobile transceiving device while using a wired interface for transmission and reception instead of a radio interface (see column 9, lines 15-18). As mentioned above, although the Waugh reference solves a problem that is not related to that addressed by the present invention, many of the claims (but not all) before the above amendment seemed to be very close to that which was shown by the Waugh reference, as pointed out by the Examiner. Given the above description of the aspect of the invention relating to a single numbering scheme, and in light of the above amendment where it is made clear that the recipient terminal is operable in a single numbering scheme that enables the recipient terminal to receive different selectable call types from the calling terminal using a single telephone number to address the recipient terminal, it will be evident that the applicant has amended the remaining rejected independent claims 1 and 21 to point out this distinction. In particular, these claims now recite that the call set-up message contains an empty bearer capability information element to the recipient terminal to inform the recipient terminal that the terminating network is not able to provide information about the call to be set-up. As explained in the specification at page 31, lines 5-21, receipt of this message informs the recipient terminal that the calling party resides outside the terminating network and enables the recipient terminal to respond with call type and bearer capability information.

Thus, independent claims 1 and 21 have been amended to point out that a call set-up message is sent to the recipient terminal comprising a bearer capability information element for indicating a type of call to be set up between the calling terminal of the originating network and the recipient terminal and that an empty bearer capability information element informs that the terminating network is not able to provide the recipient terminal with information from the originating network about the type of call to be set-up. Consequently, the claimed switch of claim 1 and the claimed method of claim 21 now cover a switch and a method for establishing a call from among different call types that permits a recipient terminal in an environment containing dissimilar networks to be operable in a single numbering scheme.

New dependent claims 44 and 52 further limit independent claims 1 and 21 to a switch and method for receiving a call confirmation message from the recipient terminal indicating call types supported by the recipient terminal and bearer capability information indicating bearer services supported by the recipient terminal. Such is not shown or suggested by Waugh.

New dependent claims 45 and 53 further limit independent claims 1 and 21 to call identification information from the originating network being interpreted in such a way as to permit setting up a connection between the terminating network and the calling terminal with a commonly agreed data modulation rate. Such is not shown or suggested by Waugh.

Dependent claims 46 and 54 further limit independent claims 1 and 21 to a switch and method for receiving call identification information in a first format from the originating network, reformatting the received call identification information into a second format and outputting the call identification information in the second format over the terminating network. As mentioned previously, the independent claims from which claims 46 and 54 depend have been amended to cover the inventive single numbering scheme which distinguishes over Waugh in a fundamental way.

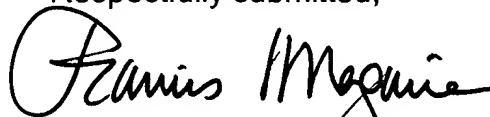
Regarding the new independent claim 56, it also includes limitations relating to a single numbering scheme and a set-up message containing an empty bearer capability information element. It is similar in structure to amended claims 1 and 21 but covers a system. The same remarks made above in connection with claims 1 and 21 apply to new claim 56 and its related dependent claims 57-68 as well.

Regarding new independent claim 69, it covers a recipient terminal and it has a new dependent claim 71 that further limits it to operating in a single numbering scheme that enables the recipient terminal to receive different selectable call types from the calling terminal using a single telephone number to address the recipient terminal. Independent claim 69 focuses on another aspect of the present invention which resides in the recipient terminal, i.e., wherein the recipient terminal is able to interpret a call set-up message containing an empty bearer capability information element as an indication

that the terminating network is not able to provide the recipient terminal with information from the originating network about the type of call to be set up. New dependent claim 70 further limits independent claim 69 to the recipient terminal being able to send a call confirmation message to the terminating network in response to receipt of the above-mentioned call set-up message containing an empty bearer capability information element wherein the call confirmation message includes an indication of call types supported by the recipient terminal and bearer capability information indicating bearer services supported by the recipient terminal. All of this is quite different from that shown by Waugh and it is believed that the above discussion will persuade the Examiner to allow the amended claims 1-7, 13-14, 21-27, and 44-77.

The prior art made of record and not relied upon is noted and it is agreed that the present invention is novel and nonobvious thereover.

Respectfully submitted,



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